

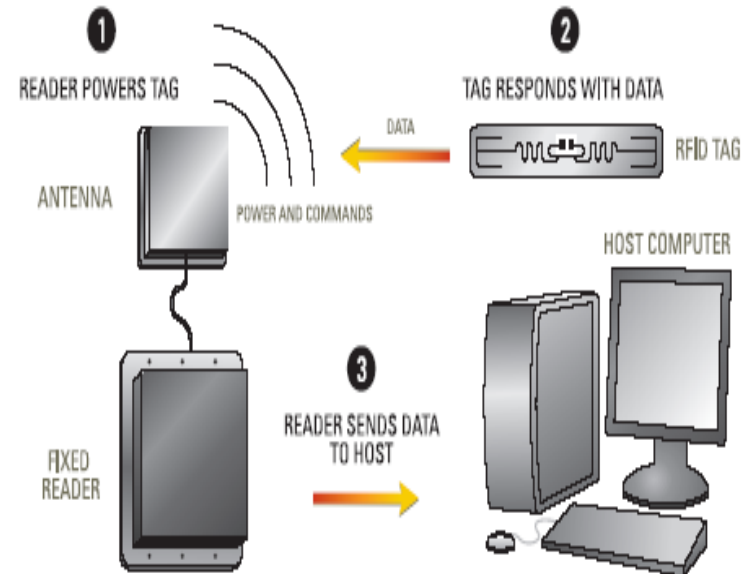
RFID enabled SOLUTIONS



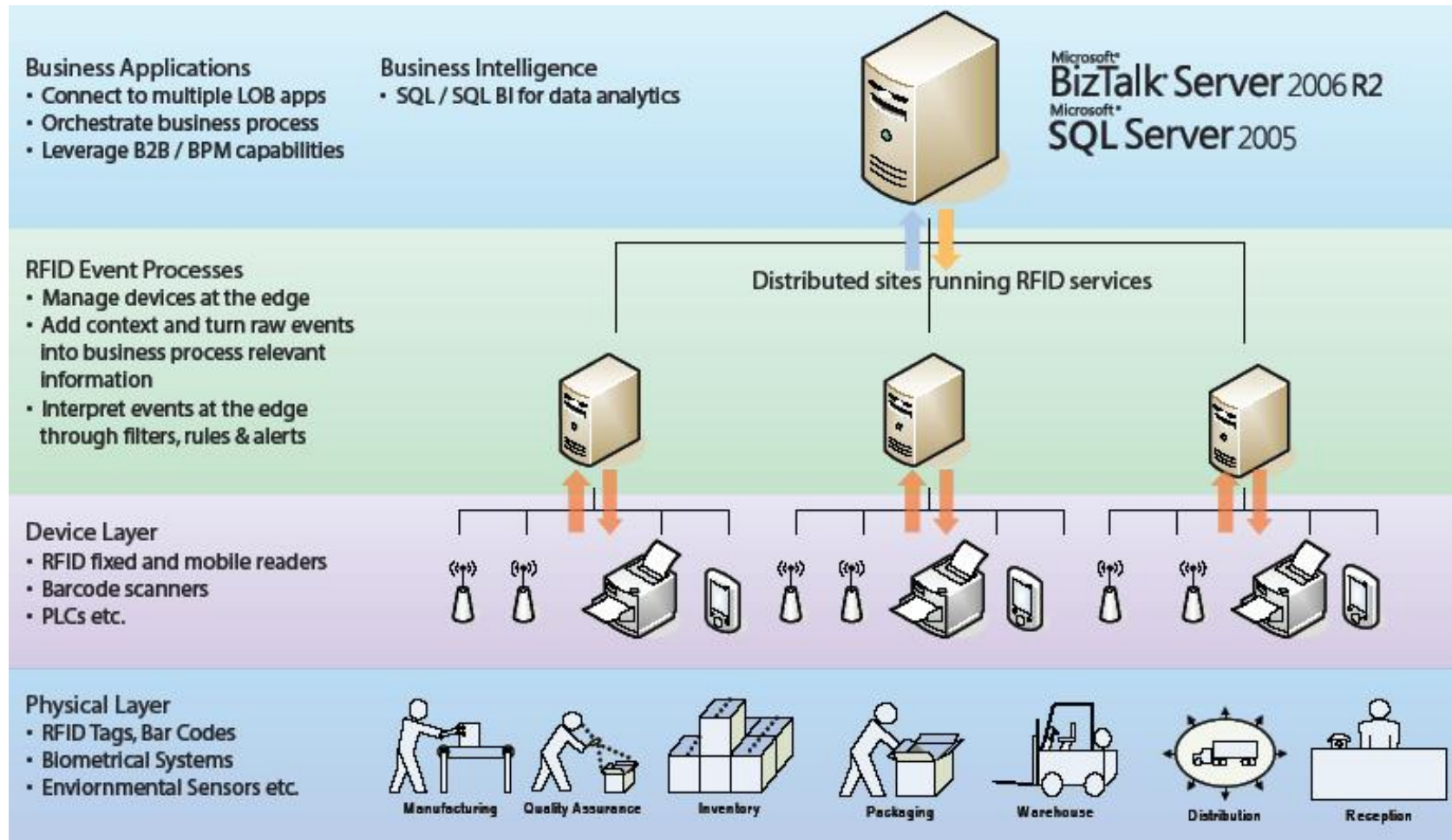
YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE

How does it work.....

- RFID is a system involving electronic tags containing identification numbers or other data that is encoded on to an Integrated Circuit (IC).
- A device called a Reader sends an electromagnetic signal via an antenna to the Tag. Upon receiving the readers signal, the tag transmits code to the reader.
- By monitoring Tag ID's, the RFID System can track the presence and location of a tagged item as it moves through the organisation.
- The Readers location is uniquely identified and Provides real time data,ie:
 - Location
 - Date Time
 - Tag data
 - Duration of tag in field



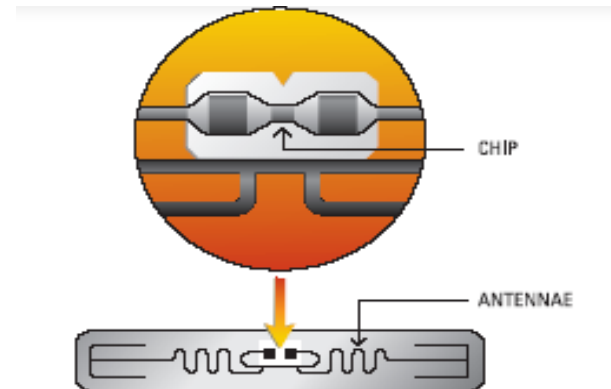
Typical System Architecture



YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE

Why RFID ...

Bar Code	RFID
Requires Line – of – Site	Does not require Line – of – Site
Requires correct orientation	Does not require orientation
Easily obscured by dirt	Not affected by dirt
Easily scratched or damaged	Unaffected by scratches (encapsulated)
Contents cannot be modified	Can modify data stored in tag
Can only read one label at a time	Can read multiple tags at once



Active vs. Passive

ACTIVE TAGS

Active tags have an internal power source, such as a battery. They have longer ranges and larger memories than passive tags and usually operate at 455 MHz, 2,45 GHz, or 5.8 GHz and have a reading range from 20 to 100m



PASSIVE TAGS

Passive tags have no internal power supply and are instead activated by the reader. Passive tags have read distances ranging from 2mm through to 4.6m, depending on the frequency of individual tags. Passive tags can operate at low frequency (LF), high frequency (HF) and ultra high frequency (UHF).



Typical Read Stations

GATE / DOCK DOOR



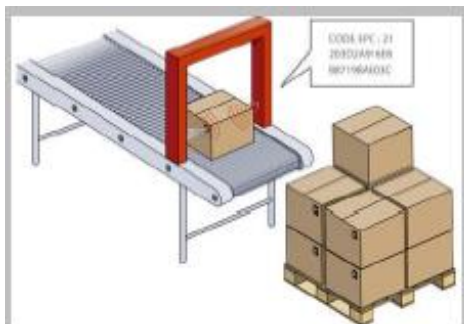
PORTAL



HAND HELD



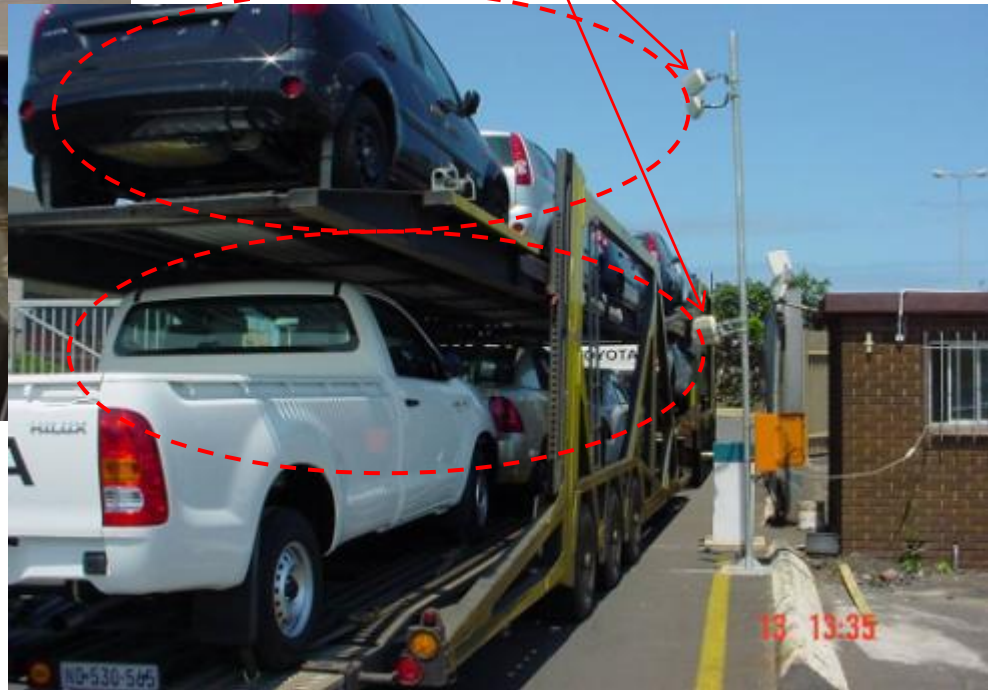
CONVEYOR



RFID Label



Antenna



UHF Passive Tags



Solutions

ACCESS CONTROL

APPARAL

ASSET MANAGEMENT

DOCUMENT TRACKING

HEALTHCARE

HEAVY INDUSTRY

LAUNDRY

LIBRARY

LOGISTICS

LIVESTOCK

MANUFACTURING

MINING

PLANT MAINTENANCE

POSTAL / COURIER

RETAIL

TRACK & TRACE

TYRE MANAGEMENT

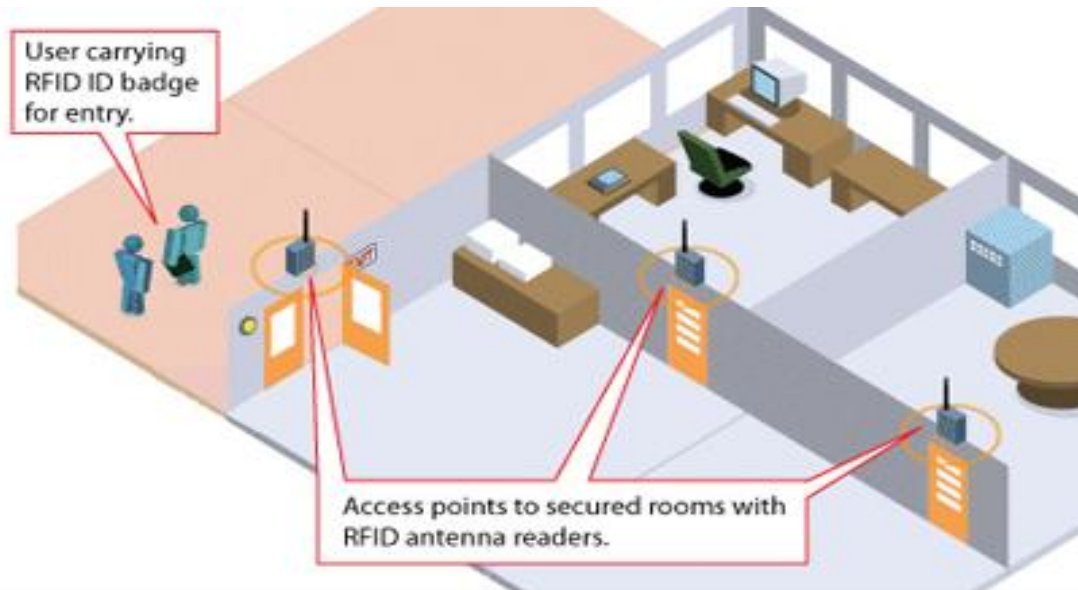
UTILITIES

YARD MANAGEMENT

WASTE MANAGEMENT

Access Control

RFID solutions will help a company improve security and make employee activity tracking an easy and efficient task.



Applications :

- Residential Access Control
- Commercial Access Control
- Security Access and Control
- Time and Attendance
- Emergency Marshalling Applications

Benefits :

- Safety & Security Compliance
- Audit Trail
- Un-manned Controlled Access
- Manage Workforce
- Manage infrastructure utilisation
- Emergency Incident management

Apparel

RFID provides the real-time inventory visibility you need to react more rapidly to inventory demand and stocking levels, helping ensure that the right product is available for your customers at the right time.

Applications :

- Factory
- Distribution Centre
- Receiving
- Back Store
- Transition Point
- Sales Floor
- Fitting Room
- Point of Sale
- Front Door



Benefits :

- Reduce out-of-stocks by 50 %
- Increase customer satisfaction and sales volume = profits
- 15 to 20 percent reduction in restocking efforts, reducing labour costs
- 90 percent reduction in labour associated with inventory counts
- Reduction in receipt of counterfeit items
- Reduce employee theft and shoplifting through improved monitoring of inventory movement
- Faster receiving and inbound processing

Asset Management

Regardless of what type of asset you use in your business, RFID can automate and error-proof this critical business process, delivering a wealth of benefits to your enterprise.

Applications :

- Financial Assets
- Moveable Assets
- Fixed Assets
- Procurement
- Insurance
- Equipment Maintenance
- Tracking



Benefits :

- Improved asset visibility
- Streamlined & accurate inventory
- Greater compliance to financial and accounting requirements
- Reduced number of lost / missing assets
- Asset Management Team add more value to an organisation
- Short return on investment cycle
- Improved service level agreement management

Document Tracking

RFID technology can dramatically reduce costs associated with tracking documents.



Applications :

- Hospitals & Medical Offices
- Libraries
- Legal
- Government
- Archived Records

Benefits :

An RFID document-tracking system saves time and money by drastically reducing:

1. Time spent searching for lost document
2. The financial and legal impact associated with losing documents

Hand Washing Management

REAL TIME MONITORING at hand cleaning stations at touch points is away of improving compliance to hand washing protocols.

- Healthcare workers wear an RFID badge.
- Hand wash stations at every touch point are equipped with an RFID reader.
- Each time a hand wash station is used the reader records the user's identify and length of stay in front of the reader.
- The accumulated data allows an organization to see how well hand washing protocol is being followed.
- Organizations can provide immediate feedback to the user with a hand cleaning score and other relevant information.
- The system can alert staff in Real Time when they forget to wash hands.
- A hand washing reporting system can be designed to be stand alone or integrated with existing health care management systems.



Applications :

- Hospitals
- Clinics
- Restaurants

Benefit :

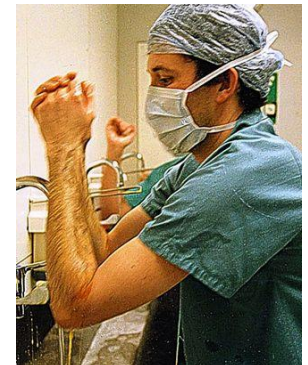
Proper hand washing is critical in preventing hospital-acquired infections and cross-infections, given the amount of contact that occurs between the nurses, patients, clients, doctors and Hospital staff.

Healthcare

Hospitals and the medical care industry in general are adopting asset tracking technology to track equipment, to track, to track staff, and to ensure patient's receive the correct medicines and care – all in an effort to reduce expenses and save patient's lives. RFID technology is key in increasing these efficiencies.

Applications:

- **Patient Tracking**
- **Wait Time Monitoring**
- **Medication authentication & Control**
- **Surgery Asset Management**
- **Asset Management**
- **Hand-washing Management**
- **Inventory Management**
- **Document Tracking & Control**
- **Access Control**
- **Laundry Management**
- **Waste Management**

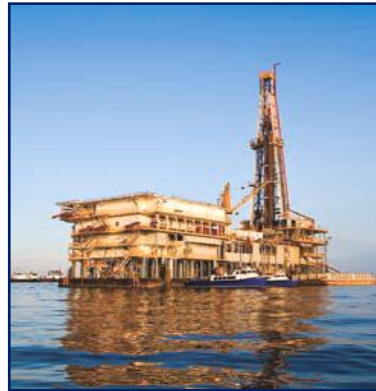


Heavy Industry/Refineries

RFID provides the automated end-to-end visibility needed to streamline every day tracking of all materials, equipment and personnel in the oil and gas industries.

Applications :

- Pipeline Inspection & Maintenance
- Asset Tracking
- Equipment Maintenance
- Personnel Tracking & Safety



Benefits :

- Increased productivity
- Improved production uptime
- Improved equipment maintenance & infrastructure
- Increased asset utilisation
- More efficient & cost effective regulatory reporting
- Improved worker safety

Laundry Management

RFID provides Real Time data on garment logistics.

Applications:

- Uniformed Staff,
- Industrial Laundries
- Linen Rentals
- Service organizations
- Utilities
- Hospitals Nursing Homes
- Sports Clubs
- Hotels



Benefits :

- Stock reduction, leading to lower garment renewal expenses.
- Automatic re-ordering of garments.
- Garments always available for staff in their size.
- Wards can be accurately charged for their laundry services.
- Generic garments sorted by size, is much easier to manage by the laundry and more economical for the hospital, service organisation, etc.
- Total control over garment flows which enables true transparency in the traceability of garments from the laundry to the hospital,, etc., and within ward.
- Better control over hygiene requirements.

Library

A unique advantage of RFID systems is their ability to scan books on the shelves without tipping them out or removing them.

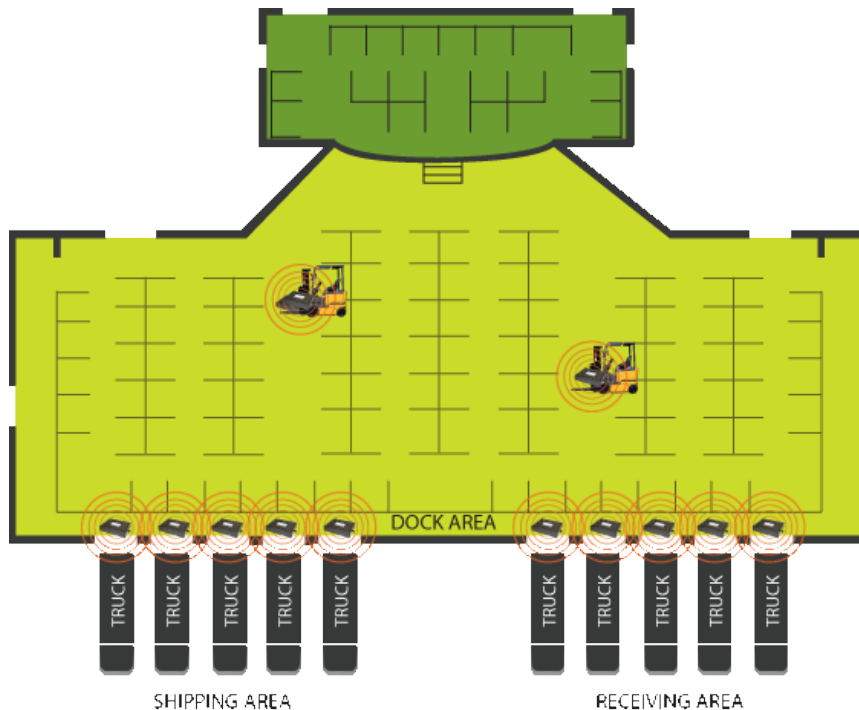


Benefits

Rapid check in / Check out
High speed inventoring
Long tag life

High reliability
Automated materials handling
Theft detection

Logistics



Applications:

- Warehousing
- Supply chain management
- Pallets
- Freight management

Benefits :

- Total asset visibility
- Full inventory history
- Reduced inventory-stocking levels
- Facilitating Just-in-Time deliveries
- Full process control for products in the facility
- Reduced lead-time and cross docking time
- Improved sort/pick rate
- Reduction in storage and shelf space
- Improved security, reduced errors and overall reduced cost of operations.

Livestock

With a growing number of countries exporting animals to other countries has led to the establishment of record keeping standards that use **RFID** as the main identification.



Applications:

- Abbatoirs
- Livestock producers
- Wildlife Conservation
- Import/Export – Customs
- Inventory

Benefits :

- An RFID tag is an efficient method of identifying animals and collecting data quickly.
- Each tag is linked to a database that includes that animal's specific information
- Prevents serious problems such as the spread of diseases from one country to another by accident.
- Being aware of the number and location of stock at all times allows farmers and other livestock producers to optimize the livestock's value.
- Using RFID at an entry gate allows livestock to be identified automatically even in large groups.
- Using RFID in wildlife conservation helps track migration patterns, monitor population growth or decline, and evaluate breeding locations

Manufacturing

For today's manufacturer, **RFID** has become an indispensable tool that lets organizations see their entire process in **real-time**.



Benefits :

- Real-time tracking of inventory, part kits and sub-assemblies
- Maintains current item information on the tag - ideal for managing production of complex or customized products and assemblies
- Eliminates the need for separate paperwork on assembly status and content
- Can automatically notify the central product database when each process has been completed
- Field personnel use RFID tag information to determine product features, date of manufacture and revision levels
- When errors are detected the ability to track at the item level reduces the impact of quality recalls

Mining

Mining operations around the world are realising the benefits of **real-time** tracking systems using RFID technology.



Applications :

- Ore Sampling & Tracking
- Grade Control Management
- Vehicle tracking (surface & underground)
- Equipment inventory & tracking
- Collision warnings
- “Man” tracking
- Production / Time Management & Control
- Blast Block Mapping



Benefits :

- Safety
- Asset Management
- Collision Avoidance
- Security
- Identification of ore / waste



Postal / Courier

Increase service efficiency from pick up to delivery with mobility.



Applications:

- Courier Services
- Postal
- High volume light logistics

Benefits :

- Reduce capital and operational costs
- Cost-effective track and trace functionality
- Automated asset management
- Automated pick-up
- Streamlined retail point-of-sale processing
- Automated sorting
- Improve customer service
- Maximize worker productivity
- Provide differentiating value-add customers services
- Improve fleet efficiency and utilization

Returnable Transit Items

(Track & Trace)

Many organizations have begun pilots with RTI to explore ways of making the logistics of the supply chain work with greater visibility and velocity utilising RFID.

Applications:

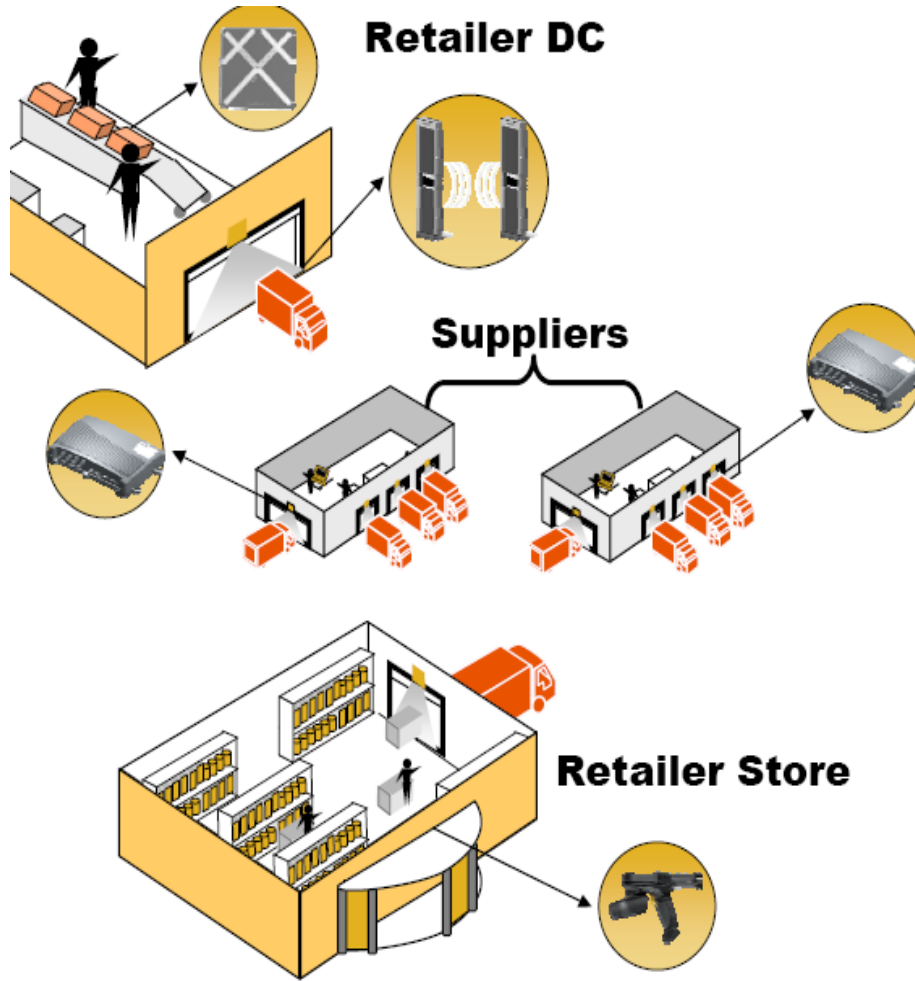
- Distribution Center (DC) to retail fulfillment
- Materials flow management
- Parts tracking
- CKD (Completely Knocked Down) packaging
- Truck tracking
- Item distribution



Benefits :

- Reduction of packaging
- Reduction of manual handling scanning
- No need to attach new identification labels
- Reduction of material stocks
- Reduction of manual handling

Retail



Applications:

- Supplier Compliance:
Tagging all cases & pallets
- RFID to automate visibility
& tracking onto shelf

Benefits:

- Increased inventory velocity
from DC to Store to Shelf
- Real-time visibility
- Inventory reduction
- Better supply-demand alignment

Tyre Management

Tyres can extend their life by retreading processes, particularly crucial for heavy duty vehicles like buses, trucks and airplanes. However, their identification has long been a tedious and dirty job, not to mention the tracking process of multi-thousands of tyres moving in and out of the retreading factories.

Each RFID provides an unique ID and storage memory for saving useful information such as manufacturers, production date and expiry date.

RFID System can capture the RFID tag information automatically, and since each ID is unique, the history can be used for preventive maintenance or tyre replacement plan.

The RFID Solution on Tyre Management can automatically visualize and keep track on the flow of tyres, moving in/out of the retreading factory and Km usage on vehicles. The whole history of the tyres can be linked with the vehicle ID and even which side it is being mounted onto.



Benefits :

- Better Management
- Cost Reduction
- Quality & Safety
- Environmental

Utilities – (Below the Ground)

RFID is playing an ever more important role in infrastructure service and maintenance to account for inventories in the field as well as identifying assets, buried and above ground.



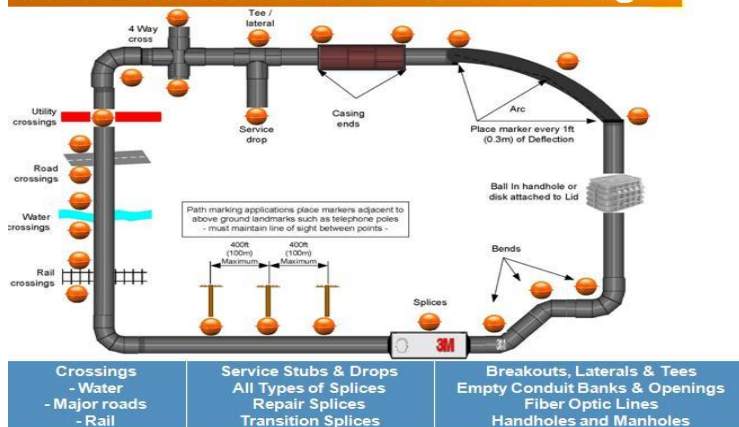
Applications:

- Oil and Gas Marking
- Communications Network Marking
- Power Utility Marking
- Mining

Benefits :

- Able to operate in challenging environments
- Enables flexible strategies for locating assets
- Implements data base back-end storage
- Facilitate maintenance tasks
- Serves as a decision for future support tools

Communications Network Marking



Yard Management

Managing The Yard effectively presents opportunities to solve some of the biggest issues in logistics intensive industries .



Applications:

- Ports
- Docks
- Yards

Benefits :

- Real-time information on locations and stack positions at all time for all containers to facilitate movements of the cargo to ship and to land transport
- Real-time information on availability of spaces available for storing incoming containers
- Real-time information and automatic alerts for containers that have been in the yard over designated period
- Facilitate automatic billing and surcharge assessments based on the storage history
- Facilitate custom inspection of containers with direct coupling to the manifest of shipment
- Eliminate human errors in data entries or periodic inventory checking

Waste Management

By using an RFID system, waste can be identified and traced through the entire waste chain.

RFID used by municipalities can monitor waste pickup. Waste Disposal trucks equipped with RFID readers pick up bins marked with RFID tags. The readers then record the exact time and place every time a waste bin is emptied. This permits a new degree of monitoring and control of the waste-disposal process.

Being outdoors, waste containers face all the elements: cold, wet and heat and being waste containers, they endure both human and machine abuse. Only RFID tags can withstand these conditions and continue functioning throughout the life cycle of these containers.

RFID used in conjunction with GPS is also providing real time visibility to all waste management activities.



Benefits :

- Cheaper, faster, more accurate data reporting. No manual data-entry is required.
- Billing of customers is more timely and accurate
- Allows municipalities to monitor performance of sub-contractors
- Unprecedented degree of control and traceability in disposing of hazardous or otherwise sensitive waste material

Uses of RFID

❖ Security and Authentication

RFID stores data within identity badges, key chains and other items that provide access control for a secure area, thereby allowing only authenticated entry.

❖ Track and Trace

Tracking the location of a particular object helps you monitor its movements. You can track critical items, pallets of products, personnel, and other items within the daily work process.

❖ Real Time Locating (RTLS)

By placing readers at strategic designated zones, tags are automatically read and the location reported real time.

❖ Environment Sensing and Monitoring

You can integrate RFID technology with devices that sense and monitor various environmental conditions.

General Benefits of RFID

❖ Serialisation

Each item has a unique ID, therefore each item can be individually tracked.

❖ Reduced Human Intervention

No human intervention is required. This reduces the error cost and labour involvement.

❖ Better Time Management

As this is scanned automatically, many items are scanned simultaneously, thus more items are accurately scanned in less time.

❖ Real Time information flow

The scanned information is updated “real – time” across the supply chain

Selecting the right technology configuration is fundamental to the success of any RFID deployment. Given this, the following must be considered:

- Proven technology,
- Physical environment,
- International Standards & Interoperability,
- Longevity, and
- Scalability.
- Most importantly the selected technology must integrate securely into the broader enterprise systems and meet deployment budgets and time-frames.

Applications - Current

- Tyres
- Vehicle Tracking
- Manufacturing – Paint Shop (Toyota)
- Barrel Tracking – KWV
- Sugar Bags Export and Re Usable
- Sample Tracking – Assmang Mine
- Ore Tracking – Kumba Iron Ore
- Asset Tracking and Management – Tyre Corporation